

AMENDMENTS TO THE CLAIMS

For the Examiner's convenience, all pending claims are set forth below and have been amended where noted:

- 1) (Currently amended) A ~~partiele~~ particulate stripping unit with a self-stripping disengagement feature for separating particulates from ~~partieles in suspension with a carrier fluid with a self-stripping disengagement feature~~, comprising:

a ~~stripping~~ vessel having a ~~primary~~ cyclone section and a stripping section, the stripping section having a cross sectional area less than a cross-sectional area of the cyclone section;

an inlet to tangentially feed a particulate-fluid suspension to the ~~primary~~ cyclone section;

a cylindrical surface within the ~~primary~~ cyclone section to separate a major fraction of the particulates from the suspension and form a vortex of reduced particulate content;

a particulate discharge outlet ~~into the stripping vessel~~ from the ~~primary~~ cyclone section to the stripping section;

a plurality of ~~openings~~ apertures disposed through a lower portion of the stripping section in a wall of the primary cyclone for entry of stripping fluid into the primary cyclone from a dilute phase in the stripping vessel; and

a ~~fluid~~ discharge line from the cyclone section ~~stripping vessel~~ in communication with the vortex of the ~~primary cyclone~~ and sealed against direct fluid entry from the dilute phase.

- 2) (Canceled)

- 3) (Canceled)

- 4) (Currently amended) The particle stripping unit of claim 1, further comprising a thermal expansion joint disposed on ~~in~~ the ~~fluid~~ discharge line from the cyclone section.

- 5) (Currently amended) The particle stripping unit of ~~claim 2~~ claim 1, further comprising a stabilizer disposed between the vortex and the stripping section, the stabilizer comprising one or more zone-forming an annular passage passages disposed therethrough between

~~the stabilizer and an interior surface of the cyclone for downward passage of particulates and upward passage of fluid.~~

6) (Currently amended) The particle stripping unit of claim 1, wherein the inlet is connected to a fluid fluidized catalytic cracking (FCC) riser ~~to receive a suspension of solid catalyst particles in the vapor.~~

7) (Canceled)

8) (Canceled)

9) (Canceled)

10) (Canceled)

11) (Canceled)

12) (Canceled)

13) (Canceled)

14) (Canceled)

15) (Canceled)

16) (Canceled)

17) (Canceled)

18) (Canceled)

19) (Canceled)

20) (Canceled)

21) (Currently amended) A method for stripping vapor from a suspension of particulates in a carrier gas, comprising:

separating particulates from the suspension in ~~an initial~~ a separation zone ~~of a cyclone~~
having a first cross-sectional area to form a particulate-rich stream with entrained
vapor and a vapor stream lean in suspended matter;

introducing a stripping fluid through a plurality of ~~openings~~ apertures formed through a lower ~~in an~~ exterior wall of a stripping zone disposed below the ~~initial~~ separation zone, the stripping zone having a second cross-sectional area less than the first cross-sectional area of the separation zone;

passing the particulate-rich stream from the separation zone through the stripping zone, making countercurrent contact with the stripping fluid to remove at least a portion of the entrained vapor, and into a dipleg in communication with the stripping zone; and

recovering stripped particulates from the dipleg.

22) (Currently amended) The method of claim 21 wherein the stripping zone is in fluid communication with the ~~initial~~ separation zone via an annular passage defined by an outside diameter of a ~~vortex~~ stabilizer and an interior wall of the ~~cyclone between the separation and stripping zones~~ zone.

23) (Currently amended) A method ~~of~~ for retrofitting an existing cyclone to a self-stripping cyclone, wherein the existing cyclone is housed within a pressurized vessel to receive a vapor-solid suspension and separate the suspension into a solids-rich stream and a solids-lean stream, the existing cyclone has a sealed lower discharge to pass the particulates into the pressurized vessel, and the existing cyclone is connected to a plenum in communication with an exterior of the pressurized vessel to recover the solids-lean stream, the method comprising:

installing a new ~~eyelone bottom~~ section beneath ~~to an upper portion of the existing cyclone to provide a stripping zone in communication with the existing cyclone upper portion,~~ wherein the new section has a cross-sectional area less than a cross-sectional area of the existing cyclone bottom ~~includes a dipleg to receive the solids-rich stream from the stripping zone and a plurality of openings apertures formed therethrough in the wall of the eyelone bottom~~ to introduce a stripping fluid into the stripping zone ~~by differential pressure;~~ and

replacing the unsealed joint with a sealed joint, if the plenum of the existing cyclone comprises an unsealed joint.

- 24) (Currently amended) The method of claim 23, wherein the new ~~eyelone-bottom~~ section comprises a vortex stabilizer wherein the vortex stabilizer and an interior wall of the cyclone ~~bottom that defines~~ define an annular passage ~~there between~~ therebetween.
- 25) (New) An apparatus for separating particulates from a carrier fluid, comprising:
- an upper section with a first cross-sectional area;
 - a lower section with a second cross-sectional area;
 - a conical member disposed within the lower section and mounted coaxially along a longitudinal centerline of the lower section thereby forming one or more passages therebetween;
 - a tangential inlet adapted to feed a particulate-fluid suspension to the upper section wherein at least a portion of the upper section has a cylindrical surface to separate a major fraction of the particulates from the suspension and form a vortex of reduced particulate content; and
 - the lower section comprising a lower surface having a plurality of apertures formed therethrough.
- 26) (New) The apparatus of claim 25 wherein the first cross-sectional area is greater than the second cross sectional area.
- 27) (New) The apparatus of claim 25 wherein a tapered transition section is disposed between the upper section and the lower section.
- 28) (New) The apparatus of claim 25 wherein the conical member comprises an apex disposed toward the upper section and a base defining one or more passages with an inner wall of the lower section.
- 29) (New) A method for stripping particulates from a particulate-fluid suspension comprising:
- introducing a particulate-fluid suspension to a vessel comprising:
 - an upper section with a first cross-sectional area;
 - a lower section with a second cross-sectional area;

a conical member dispersed within the lower section and mounted coaxially along a longitudinal centerline of the lower section thereby forming one or more passages therebetween;

a tangential inlet to feed a particulate-fluid suspension to the upper section wherein at least a portion of the upper section has a cylindrical surface to separate a major fraction of the particulates from the suspension and form a vortex of reduced particulate content; and

the lower section comprising a lower surface having a plurality of apertures formed therethrough;

separating particulates from the particulate-fluid suspension using the cylindrical surface within the upper section thereby forming a vortex of reduced particulate content;

settling the separated particulates into the lower section; and

introducing a fluid through the plurality of apertures in the lower surface of the lower section.

- 30) (New) The method of claim 29, wherein a solids flux rate in the lower section is about 24 kilograms per square meter to about 440 kilograms per square meter of stripping section cross-sectional area per second.
- 31) (New) The method of claim 29, wherein a superficial velocity of the fluid passing through the lower section is about 0.1 to about 5.0 meters per second.
- 32) (New) The method of claim 29, wherein a velocity of the stripping fluid through the plurality of openings is about 9 to about 90 meters per second.
- 33) (New) The method of claim 29, wherein the particulate-fluid suspension is a fluidized catalytic cracker riser stream containing hydrocarbon gas and particulates.

Applicant believes that no new matter has been added with these amendments.